

Claim 1 (currently amended). A system for locating and tracking at least one rover unit from a mobile controller unit comprising;

- a mobile controller unit comprising;
  - a cellular telephone module;
  - a GPS receiver/processor module;
  - a specially programmed computer;
  - a display;
  - a power source;
- a rover unit comprising;
  - a cellular telephone module;
  - a GPS receiver/processor module;
  - a specially programmed computer;
  - a power source;

the mobile controller unit being programmed to have a find feature which includes selection of a command to establish a radio communication link with the rover and to obtain the rover's position information from the rover's radio-positioning GPS receiver/processor module and, using the controller unit's position information from its GPS receiver/processor, to calculate the relative spatial position of the controller and the rover in a suitable coordinate system and the controller unit being further equipped to obtain its heading and programmed to use the heading to calculate upon command the relative spatial position having the controller as center bearing to the rover relative to the controller's heading and position and is programmed to calculate absolute positions of the controller and the rover on a map whereupon the selected one of the relative spatial positions a bearing line to the rover relative to the controller's heading and position or the absolute map positions of the controller and the rover are available to be displayed on the display upon selection by the user

Claim 2 (currently amended). The system of Claim 1 in which the controller unit and the rover unit use a common suite of GPS satellites.

Claim 3 (currently amended). The system of Claim 1 in which the controller unit is equipped with a compass to provide obtain heading of the controller unit and to use the heading so provided to calculate and to allow display of relative the bearing to the rover unit.

Claim 23 (new). The system of claim 1 in which the controller unit uses GPS information to obtain its heading.

Claim 39 (new). The system of claim 1 in which the controller is also programmed to calculate the distance from the controller to the rover and that distance is displayed at least along with the display of the bearing line.

Claim 51 (new). The system of claim 1 in which the controller is programmed to calculate the speed of movement of the rover and to enable its display.

Claim 52 (new). The system of claim 1 in which the controller is programmed to calculate the height of the rover relative to the controller and to enable its display.

Claim 53 (new). The system of claim 1 in which the controller is programmed to calculate and equipped to give an audible announcement of the rover's bearing direction and distance from the controller.

Claim 24 (new). The system of claim 2 in which the radio position information is GP pseudorange information.

Claim 25 (new). The system of claim 2 in which GPS pseudorange information is used to calculate the relative spatial position of the controller and the rover and the absolute map position of the controller and the heading of the controller.

Claim 40 (new). The system of claim 2 in which the controller is also programmed to calculate the distance from the controller to the rover and that distance is displayed at least along with the display of the bearing line.



Claim 4 (currently amended). A system for locating on demand a rover unit relative to a mobile controller unit comprising:

a mobile controller unit having comprising a radio positioning receiver; a radio communications module and a control system including a specially programmed computer for sending instructions to a rover unit and for processing data received from its own and a rover's a radio positioning module and is equipped to obtain its heading

at least one rover unit having comprising a radio positioning module, a radio communications module; a control system for receiving instructions from a controller unit and for sending radio positioning data to a controller unit;

whereby the controller may is able to display obtain and process its own position and heading data and position data of the rover and may to display on a display associated with the controller relative spatial position of a bearing line to the rover relative to the heading and position of the controller of absolute map position of the rover and the controller.

Claim 5 (currently amended). The system of Claim 4 in which the radio positioning module of the rover and the controller are is-a GPS receiver/processor modules.

Claim 26 (new). The system of claim 4 in which the controller unit is equipped to obtain and to calculate its heading from information from a radio positioning source.

Claim 27 (new). The system of claim 4 in which the controller and the rover use a common set of radio positioning sources.

Claim 41 (new). The system of claim 4 in which the controller is also programmed to calculate the distance from the controller to the rover and that distance is displayed at least along with the display of the bearing line.

Claim 48 (new). The system of claim 4 in which the controller unit is equipped with a compass to obtain heading of the controller unit and to use the heading so provided to calculate and to allow display of the bearing to the rover unit.

Claim 54 (new). The system of claim 4 in which the controller is programmed to calculate the speed of movement of the rover and to enable its display.

Claim 55 (new). The system of claim 4 in which the controller is programmed to calculate the height of the rover relative to the controller and to enable its display.

Claim 56 (new). The system of claim 4 in which the controller is programmed to calculate and equipped to give an audible announcement of the rover's bearing direction and distance from the controller.

Claim 6 (currently amended). The system of Claim 5 in which the controller unit is equipped with a compass to provide obtain heading of the controller unit and is programmed to use the heading so provided to calculate and to allow display of a relative the bearing to the rover unit.

Claim 28 (new). The system of claim 27 in which the radio positioning modules of the controller and the rover are GPS receiver/processors.

Claim 42 (new). The system of claim 27 in which the controller is also programmed to calculate the distance from the controller to the rover and that distance is displayed at least along with the display of the bearing line.

Claim 29 (new). The system of claim 28 in which the controller uses GPS information to obtain its heading.

Claim 30 (new). The system of claim 28 in which the position information is GPS pseudorange information.

Claim 31 (new). The system of claim 28 in which the controller is programmed to calculate the relative spatial position of the controller and the rover on a map and the controller is enabled to allow selection of display of the bearing line or the absolute map positions of the controller and the rover.

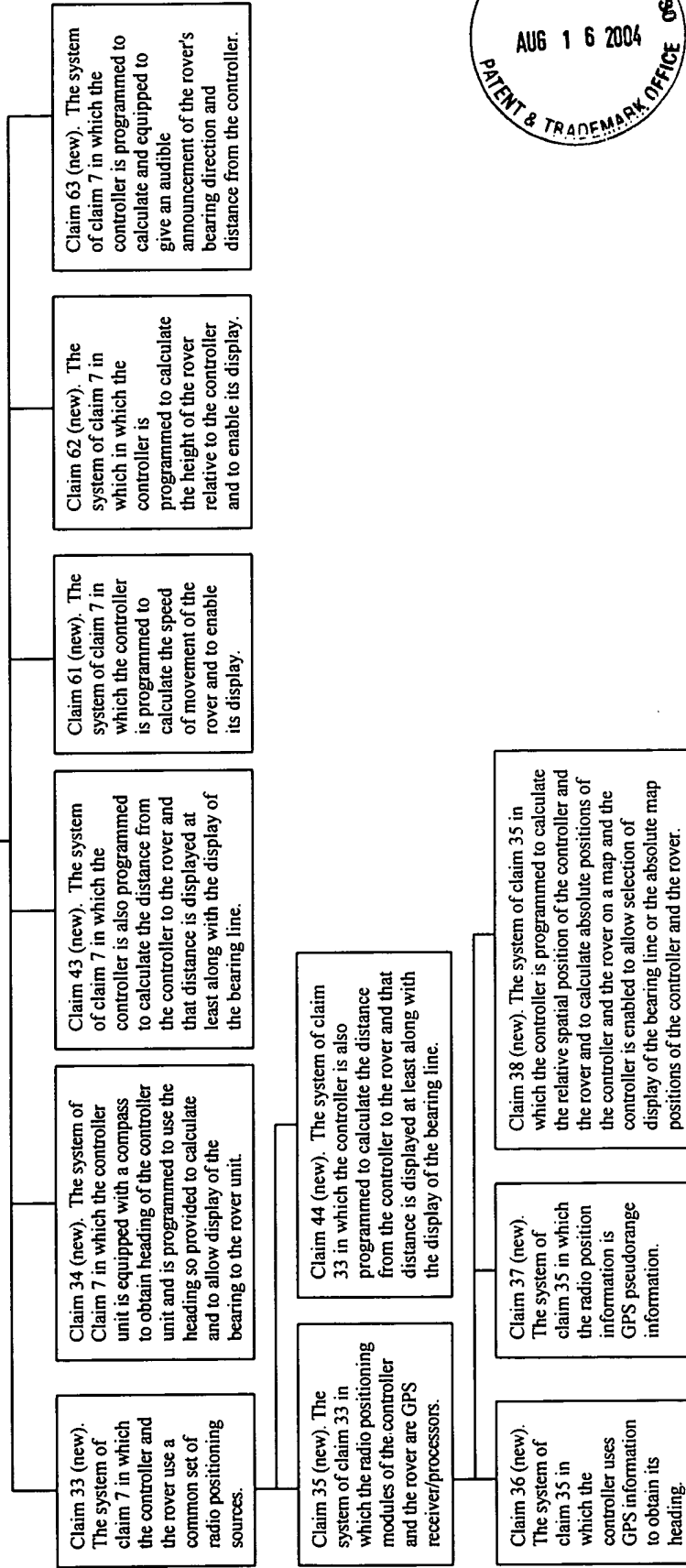
Claim 57 (new). The system of claim 28 in which GPS pseudorange information is used to calculate the relative spatial position of the controller and the rover and the absolute map position of the controller and the heading of the controller.



Claim 7 (currently amended). A system for locating and tracking at least one rover unit from a mobile controller unit comprising:

- a mobile controller unit comprising:
  - a radio communications module;
  - a radio positioning module;
  - a specially programmed computer;
  - a display;
  - a power source;
- a rover unit comprising:
  - a radio communications module;
  - a radio positioning module;
  - a specially programmed computer;
  - a power source;

the mobile controller unit being programmed to have a find feature which includes selection of a command to establish a radio communication link with the rover and to obtain the rover's position information from the rover's radio positioning module in a suitable coordinate system and the controller unit being further equipped to obtain its heading and programmed to use the heading to calculate upon command the relative spatial position having the controller as center bearing to the rover relative to the controller's heading and programmed to calculate absolute positions of the controller and the rover on a map whereupon the selected one of a bearing line to the rover relative to the controller's heading and position the relative spatial positions or the absolute map positions of the controller and the rover are available to be displayed on the display upon selection by the user.



Claim 8 (currently amended). A system for locating on demand a rover unit relative to a mobile controller unit comprising: a mobile controller unit having a radio positioning module and a radio communications module and a control system for sending instructions directly to a rover unit and for processing data received directly from a radio positioning module;  
 at least one rover unit having a radio positioning module; a control system for receiving instructions from a controller unit and for sending data directly to a controller unit whereby upon selection by a user the controller may display position data of the rover and may make available for display a bearing line from the controller to the rover relative-spatial-position of the rover or absolute map position of the rover and the controller;  
 the radio communications module and control system of the mobile controller having direct communications with the control system of the same unit such that radio data sent by the rover unit is received directly by the mobile controller unit;  
 whereby the controller unit receives radio positioning data from a radio positioning system and the rover unit receives radio positioning data from the same radio positioning system and the rover unit sends radio positioning data to the controller unit which compares the data to provide the relative spatial relationship of the rover unit and the controller unit having a means for determining its heading and for calculating the bearing from the controller unit to the rover unit relative to the position and heading of the controller unit.

Claim 9 (cancelled). The system of claim 8 in which the controller unit receives radio positioning data from a radio positioning system and the rover unit receives radio positioning data from the same radio positioning system and the rover unit sends radio positioning data to the controller unit which compares the data to provide the relative spatial relationship of the rover unit and the controller unit and the controller unit having a means for determining its heading and for calculating the bearing from the controller unit to the rover unit.

Claim 10 (currently amended). The system of claim 8 in which the controller unit also provides the distance from the controller to the rover for display at least along with the display of the bearing line.

Claim 45 (new). The system of claim 8 in which the controller unit also provides the distance from the controller to the rover for display at least along with the display of the bearing line.

Claim 49 (new). The system of claim 8 in which the controller unit is equipped with a compass to obtain its heading.

Claim 64 (new). The system of claim 8 in which calculating the speed of movement of the rover and upon selection by the user the controller displays the speed of movement of the rover.

Claim 65 (new). The system of claim 8 in which calculating the height of the rover relative to the controller and upon selection by the user the controller displays the height.

Claim 66 (new). The system of claim 8 in which the controller is equipped to give an audible announcement of the rover's bearing direction and distance from the controller.

Claim 11 (currently amended). The system of claim 10 in which the controller unit and the rover unit use a ~~commonly tracked common~~ suite of GPS or other system's satellites provide relative spatial-position to obtain radio positioning data.

Claim 46 (new). The system of claim 11 in which the controller unit also provides the distance from the controller to the rover for display at least along with the display of the bearing line.

Claim 58 (new). The system of claim 11 in which the controller unit uses GPS information to obtain its heading.

Claim 59 (new). The system of claim 11 in which the radio position information is GPS pseudorange information.

Claim 60 (new). The system of claim 11 in which GPS pseudorange information is used to calculate the relative spatial position of the controller and the rover and the absolute map position of the controller and the heading of the controller.



**Claim 12 (currently amended).** A method for locating a rover unit from a mobile controller unit in which the rover unit and the controller unit have cellular telephones capable of intra-communication of data and each have a radio positioning receiver capable of providing its radio position information, and the rover has a means for sending radio position information to the controller unit upon demand comprising: opening a cellular telephone link between the controller and the rover; starting a procedure in which the rover's radio position information is sent to the controller; comparing the rover's radio position information with the controller's radio position information to calculate relative spatial position quantities of the controller and the rover unit; determining the heading of the controller unit and calculating the bearing from the controller unit to the rover unit relative to the position and heading of the controller unit; displaying a bearing line from the controller unit to the rover unit relative to the position and heading of the controller unit the relative spatial position information on a display associated with the mobile controller unit.

**Claim 13 (currently amended).** The method of claim 12 in which the radio positioning receivers are GPS receivers and the radio position information is GPS pseudorange and ~~and earlier phase~~ information and the relative spatial position and bearing are determined using the information from ~~commonly~~ tracked a common suite of satellites.

**Claim 15 (original).** The method of claim 13 further comprising: providing a compass direction to the controller unit and displaying a relative bearing of the rover unit to the controller unit using a compass to obtain the heading of the controller unit.

**Claim 67 (new).** The method of claim 14 in which the rover and the controller use a common set of radio positioning sources.

**Claim 14 (currently amended).** The method of claim 12 in which the radio positioning receivers track receive radio position signals from a satellite radio positioning system.

**Claim 47 (new).** The method of claim 12 further comprising determining the distance from the controller to the rover and making display of the distance available either automatically with display of the bearing line, or upon selection by a user.

**Claim 50 (new).** The method of claim 12 further wherein the heading of the controller unit is obtained from a compass.

**Claim 72 (new).** The method of claim 12 further comprising calculating the speed of movement of the rover and enabling its display.

**Claim 73 (new).** The method of claim 12 further comprising calculating the height of the rover relative to the controller and enabling its display.

**Claim 74 (new).** The method of claim 12 further comprising giving an audible announcement of the rover's bearing direction and distance from the controller.

**Claim 68 (new).** The method of claim 67 in which the satellite radio positioning system is the GPS and the rover and the controller use a common suite of GPS satellites for GPS radio position information.

**Claim 69 (new).** The method of claim 68 in which the GPS radio position information is GPS pseudorange information.

**Claim 70 (new).** The method of claim 68 in which the controller uses GPS information to obtain its heading.

**Claim 71 (new).** The method of claim 68 in which the heading of the controller is obtained from a compass.



Claim 16 (currently amended). A method for locating a rover unit from a mobile controller unit in which the rover unit and the controller unit have radio communication capability between them such that the controller unit may upon query obtain information from the rover unit and each of the controller unit and the rover unit has a radio positioning module for obtaining radio positioning information such that radio position information of the rover unit will upon query be sent to the mobile controller unit and in which the mobile controller unit can process the radio position information to provide relative spatial relationship of the mobile control unit to the rover unit with periodic updates and displaying the relative spatial relationship on one or more displays associated with the mobile controller and the controller unit has a means for obtaining its heading, the method comprising:

the rover unit and the controller unit obtaining radio positioning information

the rover unit sending its radio positioning information to the controller unit;

the controller unit calculating the relative spatial position of the rover unit and the controller unit and the controller unit calculating its heading and the bearing from the controller unit to the rover unit relative to the position and heading of the controller unit and displaying a bearing line from the controller unit to the rover unit relative to the position and heading of the controller unit.





Claim 17 (currently amended). A method for locating a rover unit from a mobile controller unit in which the rover unit and the controller unit have radio communication capability between them such that the controller unit may upon query obtain information from the rover unit and each of the controller unit and the rover unit has a radio positioning module for obtaining radio positioning information such that radio position information of the rover unit will upon query be sent to the mobile controller unit and in which the mobile controller unit can process the radio position information to provide relative spatial relationship of the mobile controller unit to the rover unit with periodic updates, and the controller unit has a means to obtain its heading comprising:  
determining the bearing from the mobile controller unit to the rover unit relative to the heading and position of the mobile controller unit;  
and displaying on one or more displays associated with the mobile controller as selected by the user;  
~~an arrow showing the a bearing line showing direction of the location of the rover unit~~  
relative to the position and heading of the mobile controller unit;  
a map showing the location of both the mobile controller unit and the rover unit;  
~~identification data representing the rover unit.~~

Claim 18 (currently amended). The method of Claim 17 further displaying one or more of the following;  
the speed of movement of the rover unit;  
the distance of the rover unit to the mobile controller unit;  
the altitude of the rover unit relative to the mobile controller unit;  
a map display showing the location of the rover unit and trail indicia showing a history of the location of the rover unit over a specified period of time;  
geographical coordinates of the rover unit.

Claim 19 (currently amended)  
The method of Claim 17 further comprising:  
providing a compass to the controller unit to enable displaying of the relative bearing to of the rover unit from to the controller unit relative to the position and heading of the controller unit.

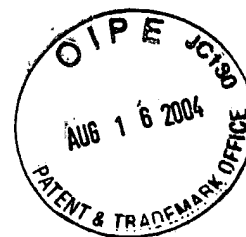


Claim 20 (currently amended). A method of finding a rover unit by use of a mobile controller unit comprising:  
 sending a query to the rover unit by signal from a radio communication module in the mobile controller unit to a radio communication module in the rover unit;  
 responding to the query, from the rover unit with radio positioning information obtained from a radio positioning module in the rover unit and sent to the mobile controller unit by way of the radio communication modules in each unit;  
the rover unit continuing to respond periodically with new radio positioning information;  
 comparing the radio position information sent to the mobile controller unit with radio positioning information received by the mobile controller unit by its own radio positioning module to determine relative spatial position and absolute map position of the rover unit;  
 obtaining heading of the mobile controller unit;  
 displaying on one or more displays;  
 an arrow showing the bearing line direction of the location of the rover unit relative to the position and heading of the mobile controller unit;  
 the speed of movement of the rover unit relative to the controller unit;  
 a map display showing the location of the rover unit and of the controller unit.

Claim 21 (original). The method of Claim 20 further comprising;  
 providing by an optional selection;  
 on said map display showing the location of the rover unit also showing a series of indicia showing a history of the location of the rover unit.

Claim 22 (currently amended). The method of Claim 21 wherein the radio positioning modules are GPS modules and the rover unit and controller unit use information from a common suite of GPS commonly-tracked satellites to provide relative spatial positions.





Claim 32 (new). A system for locating and tracking at least one rover unit from a mobile controller unit comprising  
a mobile controller unit comprising;

a radio position receiver/processor module;

a display;

a rover unit comprising;

a radio position receiver/processor module;

a specially programmed computer that is enabled to obtain and use radio positioning information for the rover and the controller from their respective radio position receiver/processors and heading information for the controller and to calculate the bearing of the rover from the controller relative to the controller's heading and position and to display on the display a bearing line from the controller to the rover relative to the controller's heading and position.

Claim 75 (new). A method for locating a rover unit from a mobile controller unit comprising:

the mobile controller unit obtaining its radio position information and its heading;

the rover obtaining its radio position information.

using the radio position information of the rover unit and the mobile controller unit and the heading of the mobile controller unit calculating with a specially programmed computer

the bearing of the rover unit relative to the heading and position of the mobile controller unit; and

displaying a bearing line from the mobile controller unit to the rover unit relative to the heading and position of the mobile controller unit.

Claim 76 (new). The method of claim 75 further comprising obtaining GPS radio positioning information of the mobile controller unit and of the rover from the GPS.

Claim 77 (new). The method of claim 75 further comprising the radio positioning information of the mobile controller unit and of the rover from a satellite system.

Claim 78 (new). The method of claim 75 further comprising obtaining the heading of the mobile controller unit from a radio positioning source.

Claim 79 (new). The method of claim 75 further comprising the mobile controller unit and the rover obtaining radio positioning information from a common set of radio positioning sources.

Claim 80 (new). The method of claim 75 further comprising calculating the distance from the mobile controller unit to the rover enabling display of the distance.

Claim 81 (new). The method of claim 75 further comprising obtaining the heading of the mobile controller unit from a compass.

Claim 82 (new). The method of claim 75 further comprising specially programmed computer the speed of movement of the rover unit and enabling its display on the mobile controller unit.

Claim 83 (new). The method of claim 75 further comprising specially programmed computer the height of the rover relative to the controller and enabling its display on the mobile controller unit.

Claim 84 (new). The method of claim 75 further comprising providing an audible announcement of the rover unit's bearing direction and distance from the mobile controller unit.

Claim 85 (new). The method of claim 76 wherein the GPS radio position information of the rover unit and the controller unit is obtained from a common suite of GPS satellites.

Claim 86 (new). The method of claim 85 wherein the radio position information is GPS pseudorange information.

Claim 87 (new). The method of claim 85 wherein the heading of the controller is obtained by using GPS signals.

Claim 88 (new). The method of claim 85 further comprising using the GPS radio positioning information, calculating the distance from the mobile controller unit to the rover unit and enabling display of the distance.



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